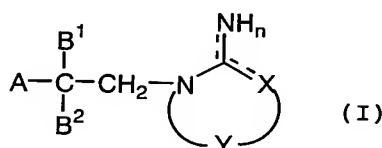


*Sub  
AS*      **ABSTRACT**

There is provided heterocyclic compounds of the following formula (I):



in which,

A is optionally substituted alkyl group, optionally substituted aryl group or optionally substituted heterocyclic group;

10      B<sup>1</sup> and B<sup>2</sup> are, hydrogen atom, alkyl group or hydroxyl group; or combined together to represent carbonyl group; X is oxygen atom, sulfur atom, carbon atom or nitrogen atom;

dotted line shows either presence or absence of bond;

15      n is integer of 1 or 2; and

the group -X-Y- represents optionally substituted alkylene or cyclic alkenylene bond;

or a pharmaceutically acceptable salt thereof.

20      These compounds have good affinity for  $\alpha_4\beta_2$  nicotinic acetylcholine receptors and activate the same to thereby exert a preventive or therapeutic effect on cerebral dysfunction.